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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
Tsutomu HONDA et al) Group Art Unit: Unassigned
Application No.: 08/666,653) Examiner: Unassigned
Filed: June 18, 1996)
For: IMAGE SHOOTING APPARATUS)

CLAIM FOR CONVENTION PRIORITY

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following prior foreign applications filed in the following country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 is hereby claimed:

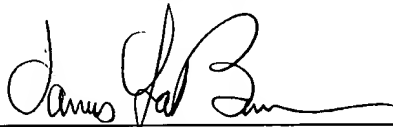
Japanese Patent Application Nos. 7-154260, 7-154261, 7-154636
and 7-154688, filed on June 21, 1995; 7-155653, filed on June 22,
1995; 7-157284, 7-157668 and 7-157713, filed on June 23, 1995.

In support of this claim, enclosed are certified copies of the prior foreign applications. These foreign applications are referred to in the original oath or declaration. Acknowledgement of receipt of these certified copies is requested.

Respectfully submitted,

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: T. Honda et al.

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Examiner: Gene N. Auduong

Filed: June 18, 1996

Group Art Unit: 2712

For: IMAGE SHOOTING APPARATUS

VERIFICATION OF TRANSLATION

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

I, the below named translator, hereby declare that:

My name and post office address are as stated below;

That I am knowledgeable in the English language and in the Japanese language;

That I have prepared the attached English translation of the Japanese language Patent Applications Nos. H07-157284, H07-157668, and H07-157713 filed June 23, 1995, the certified copy of which has been filed concerning the above identified application in the U.S. Patent and Trademark Office; and

That the English translation is a true and complete translation of the certified copy.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both,

under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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**PATENT OFFICE
JAPANESE GOVERNMENT**



This is to certify that the annexed is a true copy of the following application
as filed with this Office.

Date of Application: June 23, 1995
Application Number: Patent Application No. H07-157668
Applicant(s): Minolta Co., Ltd.

May 24, 1996

Commissioner,
Patent Office

Yuji KIYOKAWA (seal)

Certification No. H08-3029039

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[Number of Claims] 11

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[List of the Attached Documents]

[Title of the Document] Specification 1 copy

[Title of the Document] Drawings 1 copy

[Title of the Document] Abstract 1 copy

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[Title of the Document] Specification

[Title of the Invention] IMAGE SHOOTING APPARATUS

[Claims]

5 [Claim 1]

An image shooting apparatus comprising:

a silver salt picture shooting section having a silver salt picture recording means
and a silver salt information recording means;

10 a video signal recording section having a video signal recording means and a
video information recording means; and

a silver salt film individual identification number/frame number output means
for outputting an individual identification number and a frame number of a silver salt
film used as a recording medium for the silver salt picture shooting section,

15 wherein an index data recording section for recording index data which is an
aggregate of shooting information obtained during silver salt shooting is provided
separately from the video signal recording section.

[Claim 2]

An image shooting apparatus as claimed in claim 1,

20 wherein the index data recording section records information created by the
silver salt film individual identification number/frame number output means.

[Claim 3]

An image shooting apparatus as claimed in claim 1,

25 wherein the index data recording section records various items of information
other than information created by the silver salt film individual identification
number/frame number output means.

[Claim 4]

An image shooting apparatus as claimed in claim 3,

wherein the various items of information include at least one out of date and

time, print aspect ratio, title, and number of prints.

[Claim 5]

An image shooting apparatus as claimed in claim 1,
wherein the index data recording section records information as to still images.

5 [Claim 6]

An image shooting apparatus as claimed in claim 1,
wherein a recording medium of the index data recording section is a solid-state
memory.

[Claim 7]

10 An image shooting apparatus as claimed in claim 1,
wherein a recording medium of the index data recording section is a shared
portion of the recording medium of the video signal recording section.

[Claim 8]

15 An image shooting apparatus as claimed in claim 1 or 7,
wherein a tape-form recording medium is used as the recording medium of the
video signal recording section.

[Claim 9]

20 An image shooting apparatus as claimed in claim 8,
wherein the index data are recorded in a top or end portion of the tape-form
recording medium.

[Claim 10]

An image shooting apparatus as claimed in claim 1 or 7,
wherein a disk-form recording medium is used as the recording medium of the
video signal recording section.

25 [Claim 11]

An image shooting apparatus as claimed in claim 10,
wherein the index data are recorded in an outermost or innermost portion of the
tape-form recording medium.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

5 The present invention relates to a camera that functions both as a still camera and as a video camera, and particularly to an image shooting apparatus in which the recording of various items of shooting-related information and the management of index information are performed in novel manners.

[0002]

10 [Prior Art]

 In general, an image shooting apparatus is provided with various operation modes such as a silver salt shooting mode, a video shooting mode, a simultaneous shooting mode for simultaneously performing video movie shooting and silver salt picture shooting, a video playback mode, a still video shooting mode, and an edit
15 mode for editing the information recorded in the shooting information recording portion on a silver salt film. Of these modes, an appropriate one is selected as required to perform shooting, reproduction, editing, and other operations.

[0003]

 However, since such an image shooting apparatus has various and complicated
20 functions, it is necessary to indicate on a display such as a viewfinder what operation is currently being performed and what are the current states of the items needed for editing, such as individual identification number, frame number, date, time, print aspect ratio, whether or not in process of movie recording, and other items, so that such information is notified to the user and recorded on a recording medium.

25 [0004]

 In this case, when still-image shooting is performed during video movie shooting, for example, the camera is expected to be capable of searching for still-picture shooting information during reproduction. Accordingly, in order for the user

to recognize the existence of the still-picture on a recording medium, the camera is also expected to be capable of displaying the still-picture shooting information in a display unit.

[0005]

5 To achieve display of such information, in one conventional video camera, the index data recorded in a data area secured on a recording medium is recorded in one portion at the top of a DAT (Digital Audio Tape system) tape.

[0006]

[Problems to be Solved by the Invention]

10 However, in this conventional example, since the index data is placed in one portion at the top of a DAT tape, it is possible to efficiently retrieve shooting information indeed, but it is not possible to perform silver salt shooting, because a function as a still camera is not provided. Accordingly, even if the above described method is applied to an image shooting apparatus functioning both as a video camera and as a
15 still camera, it is not possible to record shooting information on a silver salt picture.

[0007]

An object of the present invention is to provide an image shooting apparatus that functions both as a still camera and as a video camera and in which shooting information of silver salt shooting is recorded in one place as index data.

20 [0008]

[Means for Solving the Problem]

To achieve the above object, according to the present invention, an image shooting apparatus is provided with: a silver salt picture shooting section having a silver salt picture recording means and a silver salt information recording means; a
25 video signal recording section having a video signal recording means and a video information recording means; and a silver salt film individual identification number/frame number output means for outputting an individual identification number and a frame number of a silver salt film used as a recording medium for the

silver salt picture shooting section. In addition, in this image shooting apparatus, an index data recording section for recording index data which is an aggregate of shooting information obtained during silver salt shooting is provided separately from the video signal recording section.

5 [0009]

In this structure, the index data recording section may record information created by the silver salt film individual identification number/frame number output means, or alternatively record various items of information other than information created by the silver salt film individual identification number/frame number output
10 means. It is preferable that the various items of information include at least one out of date and time, print aspect ratio, title, and number of prints.

[0010]

Moreover, the index data recording section may record information as to still images. Considering the data retrieval speed, it is preferable that the index data
15 recording section have a recording medium composed of a solid-state memory. However, considering the data storage capacity, it is preferable that the index data recording section share a portion of the recording medium of the video signal recording section as a supplement to the solid-state memory. This is suitable especially for storage of still-picture information.

20 [0011]

Moreover, it is preferable to use a tape-form recording medium as the recording medium of the video signal recording section. In this case, a faster data retrieval speed is achieved by recording the index data in a top or end portion of the tape-form recording medium. Alternatively, it is also possible to use a disk-form recording
25 medium instead of a tape-form recording medium. In this case, a faster data retrieval speed is achieved by recording the index data in an outermost or innermost portion of the tape-form recording medium.

[0012]

[Workings]

In the above structure, it is possible, on the one hand, to simultaneously record a silver salt picture and silver salt information, and, on the other hand, in the image signal recording section, to simultaneously record an image signal and
5 image information. The silver salt shooting information recorded during the recording of silver salt pictures and image signals is recorded in the index data recording section provided separately from the video signal recording section so that the silver salt shooting information will be retrieved easily by searching only the index data recording section. This eliminates the need to feed a film or
10 recording medium from top to end to search for a particular item of the silver salt shooting information.

[0013]

[Embodiment]

Hereinafter, an embodiment of the present invention will be described with
15 reference to the drawings. Fig. 1 schematically shows the structure of the embodiment. As shown in Fig. 1, the image shooting apparatus according to the present embodiment includes a camera body C, a main lens L serving as a main optical system, and a lighting and flashing unit F (hereinafter referred to as the "flash-and-light"). The video shooting optical system and the silver salt (silver halide) shooting
20 optical system, which will be described later, are formed of common structural members.

[0014]

In the following description of the embodiment, for easier reference between the description and the drawings, the reference designations of the components of the
25 camera body C begin with C, those of the main lens L begin with L, those of the flash-and-light F begin with F, and those of the operation unit COP provided in the camera body C begin with COP.

[0015]

Although the main lens L and the flash-and-light F are constructed separately from the camera body C in this embodiment, the present invention includes a structure in which the camera body C and the main lens L, the camera body C and the flash-and-light F, or these three portions are formed as one unit. The video shooting optical system and the silver salt shooting optical system may be formed separately from each other. Moreover, although this embodiment adopts a shooting system of an SLR type in which a shooting system for silver salt shooting and a shooting system for electronic shooting are built into one unit, it is also possible to use separate shooting systems of different types for silver salt shooting and for electronic shooting.

[0016]

As shown in Fig. 1, the camera body C is provided with a silver salt picture shooting section including a shutter driver C06, a shutter C07, a film C08, and a film advancing controller C09 (the components thus far mentioned constitute a silver salt picture recording means), and a silver salt information recording section (a silver salt information recording means) C37. Moreover, the camera body C is also provided with a video signal recording/reproduction section including an image processor C24, a recording/reproduction converter C25, a head C26, an EVF C27 serving as an electric display device, a recording medium C28, and a recording medium driver C36.

[0017]

First, the structure of the main lens L will be described below, with reference to Fig. 1. L01 and L03 represent operation rings manually operated by the user. L01 represents a focusing operation ring and L03 represents a zooming operation ring. L13 represents a stationary barrel. L02 and L04 represent operation ring condition detectors which detect rotation of the operation rings L01 and L03, respectively. Typically, the detectors L02 and L04 comprise encoders.

[0018]

L05 represents a focal length detector for detecting the focal length of the main lens L. L06 represents a lens microcomputer serving as an operational controller of the

main lens L. L07 represents a zooming motor for zooming the main lens L. L08 represents a zooming motor monitor for detecting the rotation condition of the zooming motor L07. The monitor L08 comprises, for example, a photo-interrupter.

[0019]

5 L09 represents a focusing motor for focusing the main lens L. L10 represents an AF/MF switching button for switching between automatic focusing and manual focusing. L11 represents a main lens aperture diaphragm. L12 represents a main lens aperture diaphragm controller. The main lens aperture diaphragm controller L12 includes a stepping motor for actuating the aperture diaphragm, and an aperture
10 condition detector.

[0020]

The focusing and zooming operation rings L01 and L03 are fitted on the peripheral surface of the stationary barrel L13 to be rotatable about the optical axis of the main lens L. Rotation of the focusing operation ring L01 activates power focusing.
15 Rotation of the zooming operation ring L03 activates power zooming.

[0021]

Next, the structure of the camera body C will be described below. C01 represents a camera microcomputer serving as a operational controller of the camera body C. The camera microcomputer C01 exchanges information with the main lens L
20 through data/power-supply contacts C30. As to the flash-and-light F, the camera microcomputer C01 exchanges information with the operational controller F01 of the flash-and-light F through contacts provided in an accessory shoe C20. The external view of the shoe C20 for attaching an external flash-and-light is shown in Fig. 2.

[0022]

25 C05 represents an AF auxiliary mirror provided at the rear of the above-mentioned pellicle mirror C04. The subject light having passed through the main lens L is split by the pellicle mirror C04, and one of the thus split light beams is further split by the AF auxiliary mirror C05 and directed to a focus detector C02. The focus

detector C02 transmits focus information to the camera microcomputer C01. The focus information processed by the camera microcomputer C01 is transmitted to the lens microcomputer L06, which then issues a command for driving the focusing motor L09 to perform focusing.

5 [0023]

C06 represents a shutter driver which opens and closes the shutter C07 in response to a command from the camera microcomputer C01. More specifically, the camera microcomputer C01 issues a command signal to the shutter driver C06 based on information from the operation unit COP, a brightness detector C12 and others.

10 C08 represents a film, whose surface is exposed to the light coming from the subject through the opening created by the releasing of the shutter C07 so that a latent image of the subject is formed thereupon. C09 represents a film advancing controller for driving an incorporated motor to wind and rewind the film.

[0024]

15 The other of the light beams split by the pellicle mirror C04 is directed through a condenser lens C10, a reflecting mirror C11, an ND filter C13, a relay optical system including a relay lens C14, an optical low-pass filter C16, and an IR cut filter C17 to a CCD image sensor C21. The reflecting mirror C11 is partially semi-transparent, so that part of the light is admitted to the brightness detector C12 through the semi-transparent portion for the detection of the brightness of the subject.

20

[0025]

C15 represents an ND filter controller for controlling the ND filter C13 based on ND density information set by the camera microcomputer C01 based on the difference in sensitivity between the film C08 loaded in the camera body C and the CCD image sensor C21 and based on the brightness of the subject detected by the brightness detector C12. The relay optical system is provided with a relay aperture diaphragm C18, which is controlled by a relay aperture diaphragm controller C19 so that the quantity of the light directed to the image sensor C21 is controlled.

25

[0026]

The CCD image sensor C21 converts the light from the subject into an electric signal based on driving pulses generated by a CCD driving pulse generator C23 in response to a command from the camera microcomputer C01. The photoelectrically converted electric signal is transmitted to an image forming processor C22, then subjected to analog processing such as sampling, then subjected to analog-to-digital (A/D) conversion, and then transmitted to an image processor C24.

[0027]

The image processor C24 comprises a processor unit for performing γ (gamma) correction, white balance (WB) correction, and luminance/color-difference (Y/C) conversion, a memory unit for storing image data from the processor unit, an operational controller unit for processing image in response to a command from the camera microcomputer C01, a memory unit for storing image signals from the operational controller unit, and a superimposer unit for performing superimposing. The image signals processed by the image processor C24 are transmitted to an EVF (Electronic ViewFinder) unit C27, a recording/reproduction converter C25, and an external output port C32 which is also shown in Fig. 5. In Fig. 1, the part from *a* to *a* of the transmission path between the image processor C24 and the external output port C32 is not shown for reasons of space.

[0028]

The EVF unit C27 for displaying images comprises a viewfinder unit including a liquid crystal finder, a cathode ray tube (CRT), or the like, and a converter unit for converting image signals from the image processor C24 into signals for driving the display unit. C35 represents an operation indication unit for displaying information on operation of the operation unit COP. The operation indication unit includes a large-size liquid crystal display panel C35A as shown in Figs. 2 and 6, and a lamp C35B as shown in Fig. 4.

[0029]

The recording/reproduction converter C25 encodes image signals from the image processor C24, sound signals from a sound processor C31, and other signals and information from the camera microcomputer C01 into signals adapted for a recording format, and transmits the encoded signals to a head C26. C28 represents a recording
5 medium. As the recording medium, a magnetic tape, a magneto-optical disk, a solid-state memory (RAM), or the like may be used. In this embodiment, a videocassette having a magnetic tape loaded therein is used as a representative of the recording medium.

[0030]

10 C36 represents a recording medium driver for driving the recording medium C28. The signals transmitted to the head C26 are recorded onto the recording medium C28 driven by the recording medium driver C36. Likewise, the data recorded on the recording medium C28 are read out by the head C26, and, through the decoding performed by the recording/reproduction converter C25, reproduced as image
15 signals, sound signals, other signals, and information, which are then transmitted to the image processor C24 and to the sound processor C31.

[0031]

C37 represents a silver salt shooting information recording section for recording various information onto an information recording area on a film, and it includes a
20 converter unit for converting the information from the camera microcomputer C01 into a format for recording, and a head for performing recording. In some cases, the silver salt information recording section C37 is so constructed that it can perform reproduction as well as recording.

[0032]

25 Sound is picked up by a stereophonic microphone C34 provided in a suitable position on the front surface of the camera body C as shown in Fig. 4, and is processed by the sound processor C31. The sound signals processed by the sound processor C31 are transmitted to the recording/reproduction converter C25, to a speaker C33, and to

an output port C32. In Fig. 1, the part from *b* to *b* of the transmission path between the sound processor C31 and the microphone C34 is not shown for reasons of space. C29 represents a battery provided in the camera body C to supply power to the camera body C and to the main lens L.

5 [0033]

C03 represents a camera-shake detector which detects a camera-shake of the entire camera system with the main lens L attached to the camera body C, and transmits the detection signal to the camera microcomputer C01. The camera-shake compensation in the video signal shooting section is performed by controlling the
10 readout area of the CCD image sensor C21.

[0034]

Next, the operation unit COP will be described below with reference to the external views of the present embodiment shown in Figs. 2 to 5. COP09 represents an operation mode selecting switch which also serves as a main switch. By operating the
15 switch COP09, it is possible to select one of six operation modes OFF, P_M , P_H , M_V , V, SV and E in total.

[0035]

More specifically, the selecting switch COP09 is switched to the OFF position to turn the entire camera off, to the P_M position to activate a simultaneous shooting mode
20 in which video movie shooting and silver salt shooting can be simultaneously performed, to the P_H position to activate a silver salt shooting mode in which silver salt shooting can be performed, to the M_V position to activate a video shooting mode in which video movie shooting can be performed, to the V position to activate a video reproduction mode in which a recorded video can be reproduced, to the SV position to
25 activate a still video shooting mode in which still video image shooting can be performed, and to the E position to activate an edit mode in which the information recorded on a shooting information recording portion, which will be described later, of the silver salt film C08 can be edited.

[0036]

COP01 represents a release button used in silver salt shooting. COP02 represents a switching dial for varying aperture values (AV) and time values (TV) and for switching modes in silver salt shooting and video movie shooting. By turning the switching dial COP02 while holding down a subsequently-described mode button COP07, a shooting scene is selected. By turning the switching dial COP02 while holding down a subsequently-described program button COP12, a mode is selected from among an A (aperture priority) mode, an S (shutter speed priority) mode, and an M (manual) mode.

[0037]

COP03 represents a deck open button for ejecting a videocassette tape C28 serving as a recording medium. Operation of the button COP03 opens a grip portion to allow loading and unloading of the videocassette tape C28. COP04 represents an operation button which functions as a fade-out button for starting fade-out in video shooting mode (M_v) and simultaneous shooting mode (P_M) and which functions as a trigger button for triggering a preview of a still image in silver salt shooting mode (P_H) and still video shooting mode (SV).

[0038]

COP05 represents a lens exchange button for detaching the main lens L from the camera body C. COP06 represents a red-eye reduction button for activating a red-eye reduction function in flash shooting in silver salt shooting mode (P_H) and still video shooting mode (SV). COP07 represents a mode button which is operated together with the mode switching dial COP02 to select a shooting scene such as a portrait scene or a sports scene in simultaneous shooting mode (P_M), silver salt shooting mode (P_H), video shooting mode (M_v), and still video shooting mode (SV).

[0039]

COP08 represents a film cartridge exchange button for loading and unloading a film cartridge. COP10 represents a frame aspect ratio changing switch for silver salt

shooting. COP11 represents a video movie frame size changing switch. COP12 represents a program button which, when operated alone, switches the shooting mode to a program mode. By operating the program button COP12 together with the mode switching dial COP02, a mode can be selected from among the A (aperture priority) mode, the S (shutter priority) mode, and the M (manual) mode in simultaneous shooting mode (P_M), silver salt shooting mode (P_H), video shooting mode (M_V), and still video shooting mode (SV).

[0040]

COP13 represents a zooming button which varies the focal length of the main lens L as the zooming ring of the main lens L does. COP14 represents a recording ON/OFF button which controls starting and stopping of recording onto the recording medium C28 in simultaneous shooting mode (P_M) and video shooting mode (M_V). In silver salt shooting mode (P_H) and still video shooting mode (SV), by pressing the operation button COP04 while holding down the button COP14, an image shot with the aperture diaphragm open is displayed in the EVF unit C27. By operating the switching dial COP02 while holding down the button COP14, the value of AV is varied.

[0041]

COP15 represents a camera-shake compensation ON/OFF button for activating and deactivating camera-shake compensation in simultaneous shooting mode (P_M) and video shooting mode (M_V). In silver salt shooting mode (P_H) and still video shooting mode (SV), by operating the mode switching dial COP02 while holding down the button COP15, exposure compensation is performed.

[0042]

COP16 represents a first liquid crystal unit pop-up button. By operating the button COP16, a liquid crystal unit forming the EVF unit C27 is popped up, and the grip portion is unlocked to allow the EVF unit C27 together with the grip portion to rotate around the camera body C. Thus, it is possible to shoot not only at eye level but also at waist level.

[0043]

COP17 represents a forced flashing button for forcibly firing a flash in silver salt shooting mode (P_H) and still video shooting mode (SV). COP18 represents a message display ON/OFF button for turning on and off messages displayed in the EVF unit C27.
5 COP19 represents a button for controlling sound volume and picture qualities (brightness, hue, and others) of images displayed in the EVF unit C27 in V mode.

[0044]

COP20 represents a second liquid crystal pop-up button. By operating the button COP20, the liquid crystal unit forming the EVF unit C27 is unfolded
10 longitudinally. Thus, it is possible, for example, to shoot at waist level holding the camera vertically in silver salt shooting mode (P_H) and still video shooting mode (SV).

[0045]

COP21 represents an automatic rewinding button for starting rewinding of a film even at a midpoint in a roll. COP22 represents a single-shot/continuous/self-timer button for switching among single-shot, continuous, and self-timer shooting in
15 silver salt shooting mode (P_H) and still video shooting mode (SV). In Figs. 5 and 6, C40 represents a lid of a battery cavity and C41 represents a tripod hole.

[0046]

Fig. 6 shows an example of the large-size liquid crystal display panel C35A of
20 the operation indication unit C35. As shown in the figure, the large-size liquid crystal display panel C35A includes a camera operation mode indicator, a tape run counter, a date indicator, a shutter speed indicator, an exposure compensation indicator, a red-eye reduction indicator, an aperture value/exposure compensation value indicator, a mode indicator, a battery level indicator, a self-timer mark, a film counter, a film
25 cartridge mark, a wireless flash indicator, a winding mode indicator, a shooting scene selection indicator, a manual focus indicator, and others.

[0047]

The shooting scene selection indicator is for displaying the conditions of a

shooting scene selected from portrait, landscape, close-up, sports, and night portrait/night scenes. The lamp C35B shown in Fig. 5 is lit in self-timer shooting and in red-eye reduction shooting.

[0048]

5 Back in Fig. 3, COP30 to COP34 represent a group of buttons for controlling video. COP30 represents a rewind button, COP31 represents a playback button, COP32 represents a fast-forward button, COP33 represents a stop button, and COP34 represents a pause button.

[0049]

10 Back in Fig. 2, COP 35 represents a counter ON/OFF button for turning on and off a counter that is displayed in the EVF unit C27 in simultaneous shooting (P_M) mode and video shooting mode(M_v). COP36 represents an automatic button for switching between automatic and manual operation of white balance (WB) adjustment in simultaneous shooting mode (P_M) and video shooting mode (M_v). COP37 represents a
15 menu button for turning on the display of a menu in the EVF unit C27. COP38 represents a standby button for driving a recording medium C28 up to its last recording area.

[0050]

Fig. 7 shows the construction of the principal portion of the image shooting
20 apparatus according to the present invention. In the figure, G represents an silver salt information input means, with which the operator inputs information from the outside of the camera. By operating this input means G, information can be inputted to a shooting information output means C01B, which will be described later, provided within the camera microcomputer C01.

25 [0051]

Fig. 8 shows the state of the silver salt film C08 pulled out from the film cartridge C08C. Part of the film C08 is coated with magnetic material so that information can be magnetically recorded thereupon. In this film C08, C08A

represents a film leader portion including recording tracks C08AJ on which information relevant to the whole film is recorded. C08B is a portion corresponding to the first frame and comprises an image formation portion C08BK, perforations C08BP and a recording track C08BJ on which information relevant to each frame is magnetically recorded. The same pattern as this shooting-frame portion C08B is repeated up to the last end of the film as many times as the number of frames available for shooting.

[0052]

When a film C08 is newly loaded into the image shooting apparatus of the embodiment of the present invention, on detection of the loading, a silver salt film individual identification number/frame number output section C01A in the camera microcomputer C01 generates an individual identification number. The individual identification number is then transmitted to a silver-salt/video information recording/reproduction/display control unit C01D.

[0053]

The control unit C01D transmits the individual identification number to the silver salt shooting information recording section C37 of the silver salt picture shooting section in order to record the individual identification number on the recording track C08AJ of the film leader portion C08A. If an identification number is already recorded on the recording track C08AJ, the identification number is read out by the silver salt shooting information recording section C37 and is then transmitted to the control unit C01D. The control unit C01D transmits this identification number to the image processor C24 in the video signal recording/reproduction section so that the individual identification number of the loaded film C08 is displayed in the EVF unit C27.

[0054]

Similarly, when a recording medium C28 is newly loaded into the image shooting apparatus of the embodiment of the present invention, on detection of the loading, a video recording medium individual identification number output section

C01C in the camera microcomputer C01 generates an individual identification number. The individual identification number is then transmitted to the silver-salt/video information recording/reproduction/display control unit C01D. This control unit C01D transmits the individual identification number to the recording/reproduction
5 converter C25 and the head C26 in the video signal recording/reproduction section so that the individual identification number is recorded in the video information recording portion on the recording medium C28 and is displayed in the EVF unit C27 together with an indication that the medium is new.

[0055]

10 As an example, the data area (video information recording portion) of an 8mm-format videocassette tape used as a recording medium C28 is shown in Fig. 9. If an identification number is already recorded on the data area, the recording/reproduction converter C25 and the head C26 read out the identification number and transmits it to the control unit C01D. The control unit C01D transmits the identification number to
15 the image processor C24 to display the individual identification number of the loaded recording medium C28 in the EVF unit C27 (this state, in which the individual identification number is displayed, is referred to as a set state).

[0056]

Next, a description will be given below as to shooting in silver salt shooting
20 mode (P_H) with the camera in a set state. When the operation mode selecting switch COP09 is set to the P_H position, the camera microcomputer C01 sets operation buttons ready for silver salt shooting mode (P_H). Simultaneously, the camera microcomputer C01 communicates with the lens microcomputer C01 and, when lens information is transmitted to the camera computer C01, the video signal shooting section, the video
25 signal recording/reproduction section, and the EVF unit C27 are activated.

[0057]

When the user recognizes a subject in the EVF unit C27 and presses the release button COP01 halfway in, thereby bringing the camera into an S1ON state, the outputs

of the brightness detector C12 and the focus detector C02 are transmitted to the camera microcomputer C01. A calculation section C01F in the camera microcomputer C01 processes those outputs with calculation to determine shooting conditions based on the lens information and the information on settings of the operation unit COP.

5 [0058]

When the release button COP01 is pressed further in, thereby bringing the camera into an S2ON state, the aperture diaphragm L11 and the shutter C07 are controlled according to the determined shooting conditions, and silver salt shooting is performed. On completion of silver salt shooting, the film advancing controller C09
10 of the silver salt picture shooting section advances the film C08 one frame forward. Here, the shooting conditions and shooting information of the shot that has just been taken are recorded on the magnetic track C08BJ corresponding to the frame of the shot on the film C08. Table 1 shows an example of shooting information.

[0059]

15 In Table 1 below, the items of information listed under A are those which are most desirably recorded. The print aspect ratio is an item needed for specifying the aspect ratio when an image is printed and, as shown in Fig. 10, there are three types H, C and P of print aspect ratios. Fig. 10 shows the exposure area and the print sizes on a film for a silver salt film system having three formats 16:9, 2:3, and 1:3 disclosed in
20 Japanese Laid-open Patent Application No. H7-84309. In this silver salt film system, the print size H is slightly smaller than the exposure area. In comparison with the print size H, the print size C is narrower, that is, horizontally smaller in the figure, and the print size P is shorter, that is, vertically smaller in the figure.

[0060]

25 Moreover, in Table 1, the items of information listed under B are those which are recorded according to the settings made by the operation unit COP. These items of information are gathered from a shooting information output section C01B and the video recording medium individual identification number output section C01C to the

control unit C01D first, before they are supplied to the silver salt information recording section C37 in accordance with the settings made by the operation unit COP to be recorded on the film C08.

[0061]

5 [TABLE 1]

A	B
<ul style="list-style-type: none">• Date and time• Recording location of information upon printing procedure• Print aspect ratio• Identification number of the corresponding recording media	<ul style="list-style-type: none">• Light source information (WB information)• Number of prints• Lens focal length• Aperture value• Shutter speed• Exposure compensation value• Film ISO sensitivity• Title• TV-display aspect ratio• Subject brightness• Photometry method

[0062]

10 Simultaneously, the information is also recorded in a primary memory C01E that is provided in the camera microcomputer C01 so as to serve as an index data recording section. The items to be recorded here may be the same as those recorded on the film C08, or different items may be selected. The primary memory C01E is required to have a capacity sufficient for storing information throughout a whole role of film, so that it can keep information at least until films are exchanged.

15 [0063]

Simultaneously with shooting, in the video signal recording/reproduction section, an image signal obtained almost simultaneously with the shooting is stored in an image memory 75 in the image processor C24. When the recording medium C28 becomes ready for recording, the image signal is recorded on the medium as a still

image together with information outputted from the control unit C01D. The items of information thus recorded are shown in Table 2 below.

[0064]

[TABLE 2]

5

A	B
<ul style="list-style-type: none">• Date and time• Recording location of information upon printing procedure• Print aspect ratio• Identification number of the corresponding film• Frame number of the corresponding film	<ul style="list-style-type: none">• Light source information (WB information)• Number of prints• Lens focal length• Aperture value• Shutter speed• Exposure compensation value• Film ISO sensitivity• Subject brightness• Photometry method• Title• TV-display aspect ratio

[0065]

10 In Table 2 above, the items of information listed under A are those which are most desirably recorded. The items of information listed under B are those which are recorded according to the settings made by the operation unit COP. These items of information are gathered from the shooting information output section C01B and the silver salt film individual identification number/frame number output section C01A to the control unit C01D first, before they are outputted to the recording/reproduction converter C25 in accordance with the settings made by the operation unit COP to be
15 recorded on the recording medium C28.

[0066]

According to one method of recording the information onto the recording medium C28, the information is recorded in the data area shown in Fig. 9. As another method of recording the information, Fig. 11 shows an example of recording and repro-

ducing the information in the form of characters onto and from a video recording medium. According to this method, the information may be recorded in the form of characters on the screen as shown at (A) in Fig. 11, or on the screen ((C) in Fig. 11) immediately following the screen of a still image ((B) in Fig. 11) as shown at (B) and (C) in Fig. 11. Further, it is also possible to simultaneously record the information both in the form of characters and in the data area.

[0067]

Here, a still image is so recorded that it can be adapted for a plurality of print aspect ratios in case the aspect ratio is changed in edit mode (E) described later. Moreover, on the EVF screen immediately after shooting, the information in the form of characters and the subject image are displayed in a mixed fashion on the same screen as shown at (A) in Fig. 13, and it is possible to rewrite the shooting information as described later.

[0068]

Next, a description will be given below as to shooting in simultaneous shooting mode (P_M) with the camera in a set state. When the operation mode selecting switch COP09 is set to the P_M position, the camera microcomputer C01 sets operation buttons ready for simultaneous shooting mode (P_M). Simultaneously, the camera microcomputer C01 communicates with the lens microcomputer C01, and lens information is transmitted to the camera microcomputer C01.

[0069]

Thereafter, the focus detector C02 and the brightness detector C12 are activated to perform AE (automatic exposure adjustment) and AF (automatic focus adjustment) operations. Further, the video signal shooting section, the video signal recording/reproduction section, and the EVF unit C27 are activated to display a subject image captured through the taking lens in the EVF unit C27. When the user recognizes a subject in the EVF C27 and operates the recording ON/OFF button, recording of a movie is started.

[0070]

In the movie-recording state, when the release button COP01 is pressed halfway in (to establish the S1ON state), the outputs of the focus detector C02 and the brightness detector C12 are transmitted to the camera microcomputer C01. The calculation section C01F processes those outputs with calculation to determine shooting conditions based on the lens information and the information on settings of the operation unit COP.

[0071]

When the release button COP01 is pressed further in to establish the S2ON state, the aperture diaphragm L11 and the shutter C07 are controlled according to the determined shooting conditions, and silver salt shooting is performed. On completion of silver salt shooting, the film advancing controller C09 of the silver salt picture shooting section advances the film C08 one frame forward. Here, the shooting conditions and shooting information of the shot that has just been taken are recorded on the magnetic track C08BJ corresponding to the frame of the shot on the film C08. Meanwhile, recording of the movie is continued. Table 3 below shows the items of shooting information in this case.

[0072]

[TABLE 3]

A	B
<ul style="list-style-type: none">• Date and time• Recording location of information upon printing procedure• Print aspect ratio• Identification number of the corresponding recording medium	<ul style="list-style-type: none">• Light source information (WB information)• Number of prints• Lens focal length• Aperture value• Shutter speed• Exposure compensation value• Film ISO sensitivity• Subject brightness• Photometry method

	<ul style="list-style-type: none"> • Title • TV-display aspect ratio
--	--

[0073]

In Table 3 above, the items of information listed under A are those which are most desirably recorded. The items of information listed under B are those which are recorded according to the settings made by the operation unit COP. These items of information are gathered from the shooting information output section C01B and the video recording medium individual identification number output section C01C to the control unit C01D first, before they are outputted to the silver salt information recording section C37 according to the settings made by the operation unit COP and are recorded on the film C08. Simultaneously, the information is also recorded in the primary memory C01E in the camera microcomputer C01. The items recorded here may be the same as those recorded on the film C08, or different items may be selected.

[0074]

Simultaneously with shooting, in the video signal recording/reproduction section, an image signal obtained almost simultaneously with the shooting is recorded together with the information outputted from the control unit C01D. The items of the recorded information are shown in Fig. 4 below.

[0075]

[TABLE 4]

A	B
<ul style="list-style-type: none"> • Date and time • Recording location of information upon printing procedure • Print aspect ratio • Identification number of the corresponding film • Frame number of the corresponding film 	<ul style="list-style-type: none"> • Light source information (WB information) • Number of prints • Lens focal length • Aperture value • Shutter speed • Exposure compensation value • Film ISO sensitivity

<ul style="list-style-type: none"> • In process of movie shooting 	<ul style="list-style-type: none"> • Subject brightness • Photometry method • Title • TV-display aspect ratio
--	---

[0076]

In Table 4 above, the items of information listed under A are those which are most desirably recorded. The items of information listed under B are those which are recorded according to the settings made by the operation unit COP. These items of information are gathered from the shooting information output section C01B and the silver salt film individual identification number/frame number output section C01A to the control unit C01D first, before they are outputted to the recording/reproduction converter C25 according to the settings made by the operation unit COP and are recorded on the recording medium C28. The items recorded here may be the same as those recorded on the film C08, or different items may be selected.

[0077]

According to one method of recording the information onto the recording medium C28, the information is recorded on the data area shown in Fig. 9. Alternatively, the information may be recorded in the form of characters on the screen as shown at (A) in Fig. 11, or on the screen ((C) in Fig. 11) immediately following the screen of a still image ((B) in Fig. 11) as shown at (B) and (C) in Fig. 11. Further, it is also possible to simultaneously record the information both in the form of characters and in the data area. It is to be noted, however, that screens containing only information in the form of characters ((C) in Fig. 11) are skipped during reproduction of a movie.

[0078]

The recording operation activated by operating the release button COP01 while the camera is in the video recording standby state or while movie-video recording is not performed in simultaneous shooting mode (P_M) is the same as the recording

operation in silver salt shooting mode (P_H). Recording performed during shooting has been described hereinbefore. Hereinafter, a description will be given as to reproduction and editing. The state in which some shooting has been performed in the set state is hereinafter referred to as "the shooting state". In this shooting state,
5 when the operation mode selecting switch COP09 is set to the video reproduction mode (V) position, the camera microcomputer C01 sets operation buttons ready for the video reproduction mode (V).

[0079]

In this set state, a press of the rewind button COP30 rewinds the videocassette
10 tape serving as the recording medium C28, a press of the stop button COP33 stops rewinding, and thereafter, a press of the playback button COP31 starts reproduction. The image signal recorded on the recording medium C28 and the shooting information recorded in the data area are read out by the head C26, decoded by the recording/reproduction converter C25, processed by the image processor C24, and then
15 displayed in the EVF unit C27. Here, the display in the EVF unit C27 is performed according to the shooting information recorded in the data area of the recording medium C28 in the following manner.

[0080]

1) If no information is available as to still shooting, an ordinary video is
20 reproduced.

2) If information is available as to still shooting, and a movie is not being shot, a still image is reproduced. For example, screens as shown at (A) to (C) in Fig. 11 are displayed for approximately fifteen seconds.

3) If information is available as to still shooting, and a movie is being shot,
25 an ordinary video is reproduced. However, a shutter sound accompanying shooting is not suppressed but kept alive. Alternatively, a still image is reproduced as in 2) above.

[0081]

In the shooting state, when the operation mode selecting switch COP09 is set to

the edit mode (E) position, the camera microcomputer C01 sets operation buttons ready for the edit mode (E). Simultaneously, the control unit C01D reads out the shooting information as to the loaded film C08 recorded in the primary memory C01E in the camera microcomputer C01, transmits the information to the image processor C24, and displays the information as index information in EVF C27 as shown in Fig. 12. As index information, shooting information of each frame is displayed together with the period from the first frame to the last frame of the film C08.

[0082]

In this state, when the playback button COP31 is pressed, the camera microcomputer C01 instructs the recording medium driver C36 to feed the tape backward, and reproduces the data in the data area through the head C26. In this process of reproduction, when information as to still shooting is found on the recording medium, feeding of the tape is stopped for a while so that the information of a still image and the shooting information are reproduced and displayed in the EVF unit C27. Search for information as to still shooting is realized, for example, by reproducing time codes to rewind the tape up to the same time point as the time inside the primary memory C01E and then reproducing data in the data area at a slow speed.

[0083]

Still images are reproduced as shown at (A) to (C) in Fig. 11. A still image is reproduced for approximately 15 seconds and, when this predetermined time passes away, the next image is reproduced. It is possible to rewind the tape during reproduction in order to search for information of the next still image. In this case, when the stop button COP33 is pressed during reproduction, the camera microcomputer C01 stops the search for the next still image, and continues reproducing the still image that has been reproduced until that time, simultaneously superimposing the shooting information thereupon as shown at (A) in Fig. 13. Alternatively, an image to be edited with the fast-forward button and the rewind button in a screen as shown in Fig. 12 is first selected and is then searched for with a pause button. The searched image

is displayed as shown at (A) in Fig. 13. Items to be edited can be selected with the fast-forward button COP32 and the rewind button COP30.

[0084]

5 In order to rewrite a selected item, the screen is switched to an edit screen by pressing the pause button (set) COP34. A state of the screen observed after the print aspect ratio is selected as an item to be edited and the pause button COP34 is pressed in the screen shown at (A) in Fig. 13 is shown at (B) in Fig. 13. Here, the edge lines of the frames H, C and P appear on the screen. In this state, when the frame C is selected with the playback button COP31, the display of the portions other than the
10 frame of the print aspect ratio C changes from colored to monochrome.

[0085]

Here, when the pause button COP34 is pressed, the print aspect ratio is switched to C, the data in the primary memory C01E is rewritten, and the screen returns to the state shown at (A) in Fig. 13. Simultaneously, the camera
15 microcomputer C01 instructs the silver salt picture shooting section to rewrite the aspect ratio of the corresponding frame, so that the film C08 is rewound up to the corresponding frame and its aspect ratio is rewritten by the silver salt shooting information recording section C37.

[0086]

20 Operations on the screen of the EVF C27 unit are achieved by means of a silver salt information input section G. When the screen shown at (A) in Fig. 13 is displayed, a press of the playback button COP31 reproduces the next still image. When the screen shown at (A) in Fig. 13 is displayed, a press of the stop button COP33 returns the screen to an index screen as shown in Fig. 12. When the screen shown in
25 Fig. 12 or Fig. 13 is displayed, switching of the operation mode selecting switch COP09 from the edit mode (E) position to another position leads the camera microcomputer C01 to cause the film C08 and the recording medium C28 to be driven up to their standby positions (for example, up to the top of the unexposed portion of the film C08,

and up to the top of the unrecorded portion of the recording medium C28).

[0087]

If the control is left as described above, the index data of a film C08 with which shooting is finished is kept stored in the primary memory C01E, causing shortage of available memory. In this case, by pressing the film cartridge exchange button COP08, the primary memory C01E is reset to allow exchange of films C08.

[0088]

However, since the above operation erases index data of a film C08 with which shooting is completed, it is necessary to create a new set of index data. The operation to achieve this will be described below. Although the following description deals with a tape-form recording medium C28, the same description is applicable to a disk-form recording medium.

[0089]

Fig. 14 shows an example of creating index data on a tape-form recording medium. As shown in the figure, an area for recording index data is provided beforehand at the top or end of the tape. Incidentally, in the case of a disk-form recording medium C28, an area 80 for recording index data is provided in the innermost or outermost portion thereof.

[0090]

Under the condition that the operation mode selecting switch COP09 is in the edit mode (E) position, when the film cartridge button COP08 is pressed, the camera microcomputer C01 instructs the recording medium driver C36 to feed the tape backward, and reproduces the data in the data area through the head C26. In this process of reproduction in the reverse direction, when information as to still shooting is found on the recording medium, feeding of the tape is stopped for a while so that the information of a still image is reproduced in the forward direction and stored in the image memory in the image processor C24. Then, a next set of information as to still shooting is searched for and, when information as to still shooting is found, the

information of a still image is stored in the image memory in the same manner as described above.

[0091]

When still images are stored as described above until reaching the predetermined capacity of the image memory, the tape is driven up to its index area so that the information as to still images in the image memory and the corresponding shooting information are recorded therein. Here, the shooting information refers to that stored in the primary memory C01E. When the above process is repeated until the index data of the currently loaded film C08 is completely created, the film cartridges C08C can be exchanged.

[0092]

Similarly, in order to exchange tapes, the deck open button COP03 is operated with the operation mode selecting switch COP09 set in the edit mode (E) position. Then the index data of the currently loaded film C08 is created on the tape and, thereafter, tapes can be exchanged.

[0093]

[Advantages of the Invention]

As described above, according to the present invention, in an image shooting apparatus that, on the one hand, simultaneously records a silver salt picture and silver salt information, and that, on the other hand, in the image signal recording section, simultaneously records an image signal and image information, an index data recording section for recording index data which is an aggregate of shooting information obtained during silver salt shooting is provided separately from an image signal recording section. As a result, the silver salt shooting information obtained during recording is recorded in the index data recording section, and thus can be retrieved easily by searching only the index data recording section. This eliminates the need to feed a film or recording medium from top to end to search for a particular item of the silver salt shooting information.

[0094]

By using the index data recording section to record information created by the silver salt film individual identification number/frame number output means as claimed in claim 2, or by using it to record various items of information other than that information as claimed in claim 3, it is possible to use the image shooting apparatus more efficiently as a data base. By using the index data recording section to record information as to still images as claimed in claim 5, it is possible to use the image shooting apparatus more efficiently as a data base.

[0095]

According to claim 6, a solid-state memory is used as a recording medium of the index data recording section. This helps achieve a faster data retrieval speed. Moreover, according to claim 7, the index data recording section shares a portion of the recording medium of the video signal recording section. Considering that a solid-state memory has a limited storage capacity, this is suitable especially for storage of still-picture information, which tends to require a large storage capacity.

[0096]

According to claims 8 and 9, a tape-form recording medium is used as the recording medium of the video signal recording section, and the index data is recorded in a top or end portion of the tape-form recording medium. This helps achieve a faster data retrieval speed. Similarly, according to claims 10 and 11, a disk-form recording medium is used as the recording medium of the video signal recording section, and the index data is recorded in an outermost or innermost portion of the tape-form recording medium. This helps achieve a faster data retrieval speed.

[Brief Description of the Drawings]

[Fig. 1]

An outline construction diagram showing a video camera incorporating a still camera embodying the present invention.

[Fig. 2]

A plan view showing the appearance of the camera of the embodiment.

[Fig. 3]

A rear view showing the appearance of the camera of the embodiment.

5 [Fig. 4]

A front view showing the appearance of the camera of the embodiment.

[Fig. 5]

A bottom view showing the appearance of the camera of the embodiment.

[Fig. 6]

10 A detail plan view of the operation indication unit of the camera of the embodiment.

[Fig. 7]

A block diagram showing the interconnection between the camera microcomputer and various portions of the camera of the invention, with respect to the
15 flow of information.

[Fig. 8]

A diagram showing the state of the silver salt film pulled out from the film cartridge, schematically illustrating how information is recorded onto a magnetic layer.

20 [Fig. 9]

A diagram showing the data area on an 8mm-format videocassette tape.

[Fig. 10]

A detail diagram showing the exposure area and the print sizes of a film conforming to one film system.

25 [Fig. 11]

A diagram showing how information is recorded onto and reproduced from the video recording medium in the form of characters.

[Fig. 12]

A diagram showing an example of the index screen displayed in the EVF unit.

[Fig. 13]

A diagram showing examples of the edit screen.

[Fig. 14]

- 5 A diagram showing an example of index data created for a tape-form recording medium.

[Description of the Reference Designations]

L	Main lens	L01	Focusing operation ring
L02	Focusing operation ring condition detector	L03	Zooming operation ring
10 L04	Zooming operation ring condition detector	L05	Focal length detector
L06	Lens microcomputer	L07	Zooming motor
L08	Zooming motor monitor	L09	Focusing motor
L10	Sound processor	L11	Main lens aperture diaphragm
L12	Main lens aperture diaphragm controller	L13	Stationary barrel
15 C	Camera body		
C01	Camera microcomputer		
C01A	Silver salt film individual identification number/frame number output section		
C01B	Shooting information output means		
C01C	Video recording medium individual identification number output means		
20 C01D	Silver-salt/video information recording/reproduction/display control unit		
C01E	Primary memory	C01F	Calculation section
C02	Focus detector	C03	Camera-shake detector
C04	Pellicle mirror	C05	AF auxiliary mirror
C06	Shutter driver	C07	Shutter
25 C08	Film	C08A	Film leader portion
C08B	Portion corresponding to a frame	C08C	Film cartridge
C09	Film advancing controller	C10	Condenser lens
C11	Reflecting mirror	C12	Brightness detector

	C13	ND filter	C14	Relay lens
	C15	ND filter controller	C16	Optical low-pass filter
	C17	IR cut filter	C18	Relay aperture diaphragm
	C19	Relay aperture diaphragm controller	C20	Accessory shoe
5	C21	CCD image sensor	C22	Image forming processor
	C23	CCD driving pulse generator	C24	Image processor
	C25	Recording/reproduction converter	C26	Head
	C27	EVF unit	C28	Recording medium
	C29	Battery	C30	Data/power-supply contacts
10	C31	Sound processor	C32	Output port
	C33	Speaker	C34	Stereophonic microphone
	C35	Operation indication unit	C35A	Large-size liquid crystal display panel
	C35B	Lamp	C36	Recording medium driver
	C37	Silver salt information recording section	C40	Battery cavity lid
15	C41	Tripod hole		
	COP	Operation unit	COP01	Release button
	COP02	Mode switching dial	COP03	Deck open button
	COP04	Still-picture-preview/fade-out button		
	COP05	Lens exchange button	COP06	Red-eye reduction button
20	COP07	Scene select button	COP08	Film cartridge exchange button
	COP09	Operation mode selecting switch		
	COP10	Silver salt shooting frame aspect ratio changing switch		
	COP11	Video movie frame size changing switch		
	COP12	Program button	COP13	Zoom button
25	COP14	Aperture diaphragm opening button		
	COP15	Camera-shake compensation ON/OFF and exposure compensation button		
	COP16	First liquid crystal unit pop-up button		
	COP17	Forced flashing button		

COP18 Message display ON/OFF button

COP19 Sound-volume/picture-quality adjustment button

COP20 Second liquid crystal pop-up button

COP21 Automatic rewinding button

5 COP22 Self-timer button

COP30 Rewind button

COP31 Playback button

COP32 Fast-forward button

COP33 Stop button

COP34 Pause button

COP35 Counter ON/OFF button

COP36 Automatic button

COP37 Menu button

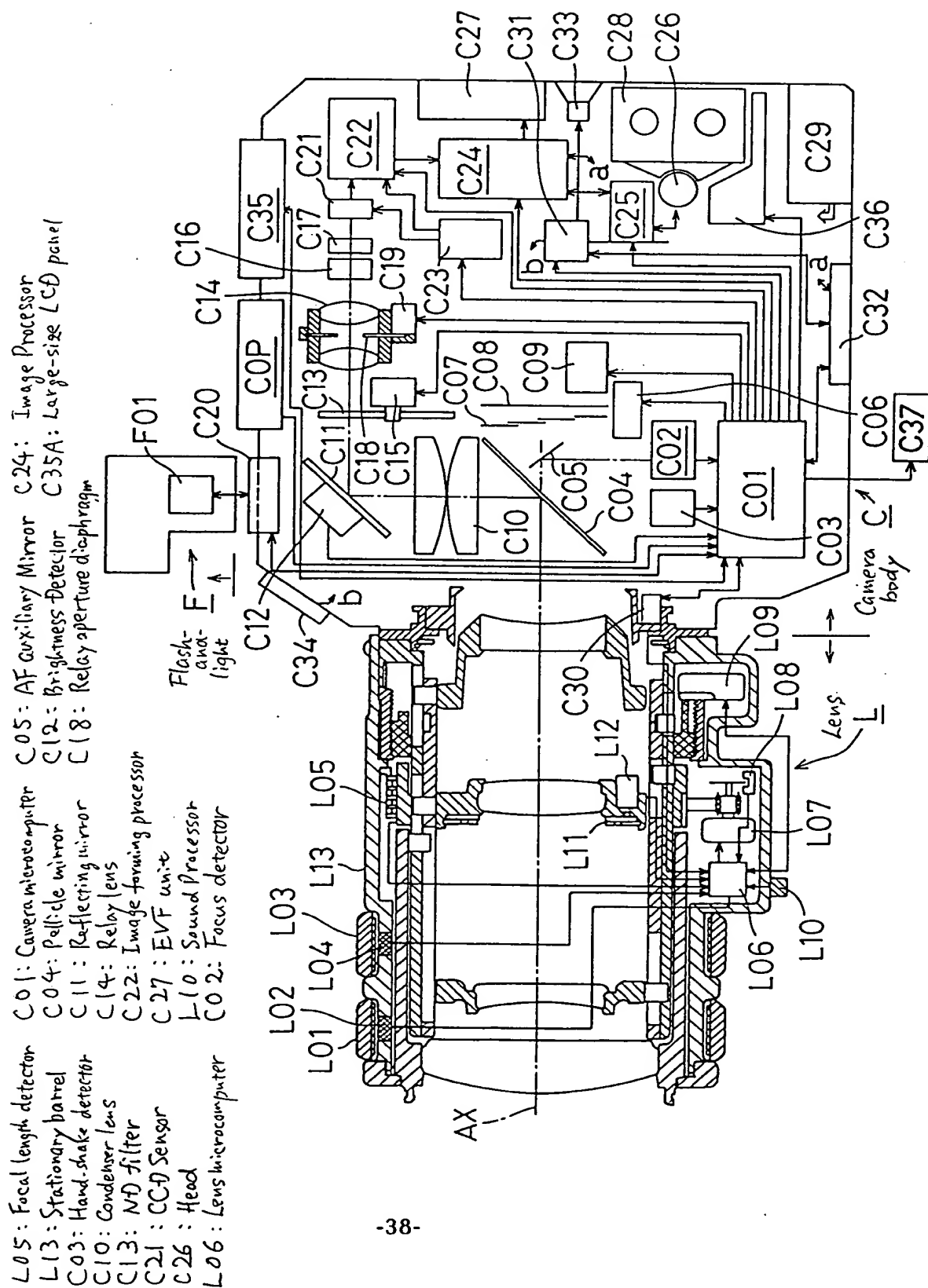
COP38 Standby button

10 F Flash-and-light

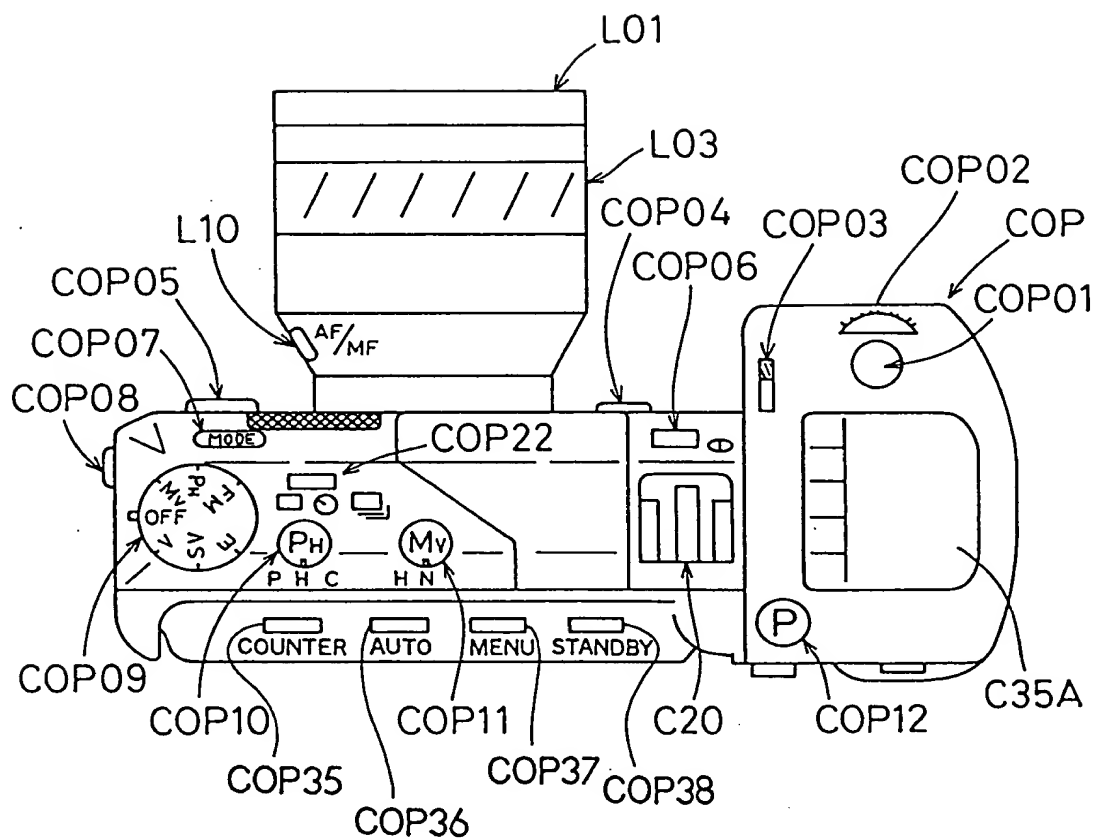
F01 Flash-and-light operational controller

G Silver salt information input means

[Fig. 1]



[Fig. 2]



COP: Operation Unit

COP01: Release button

COP02: Mode switching dial

COP07: Scene select button

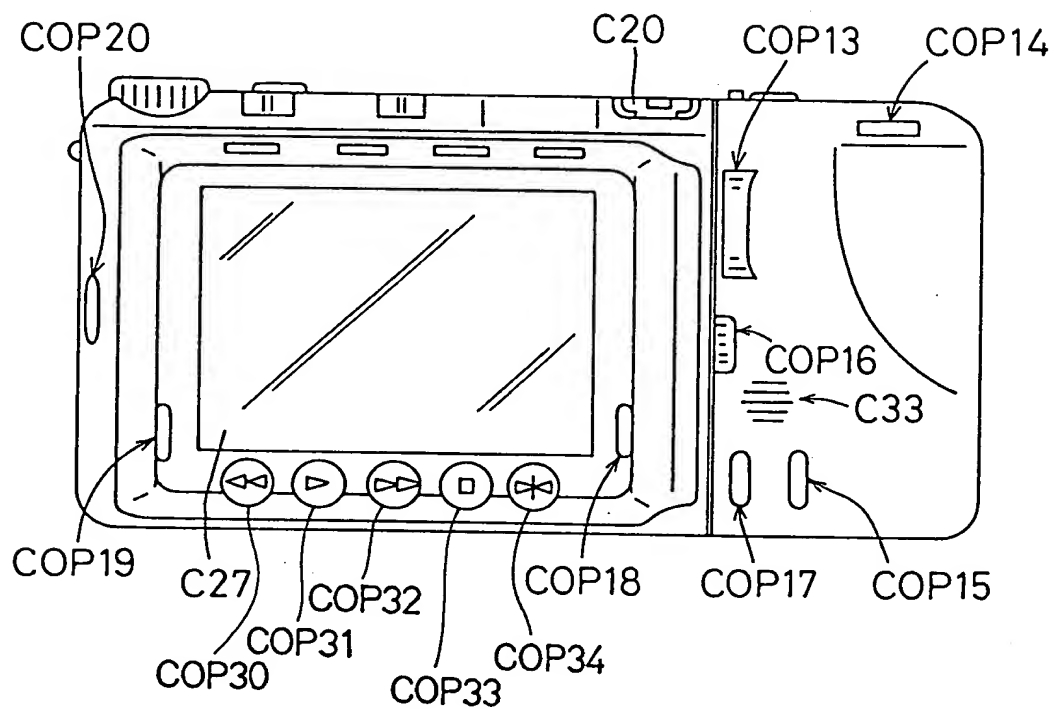
COP09: Operation mode selecting switch

COP10: Silver salt shooting frame aspect ratio changing switch

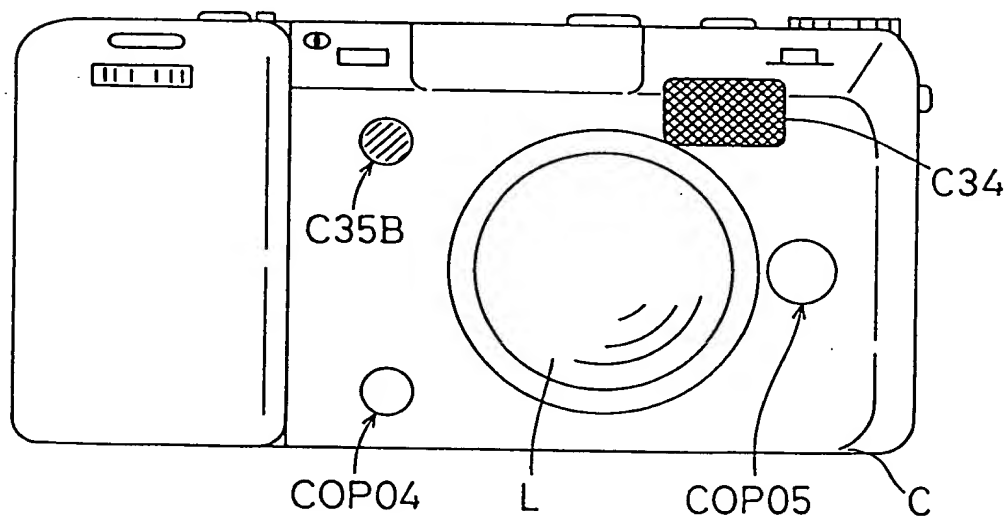
COP11: Video movie frame size changing switch

COP12: Program button

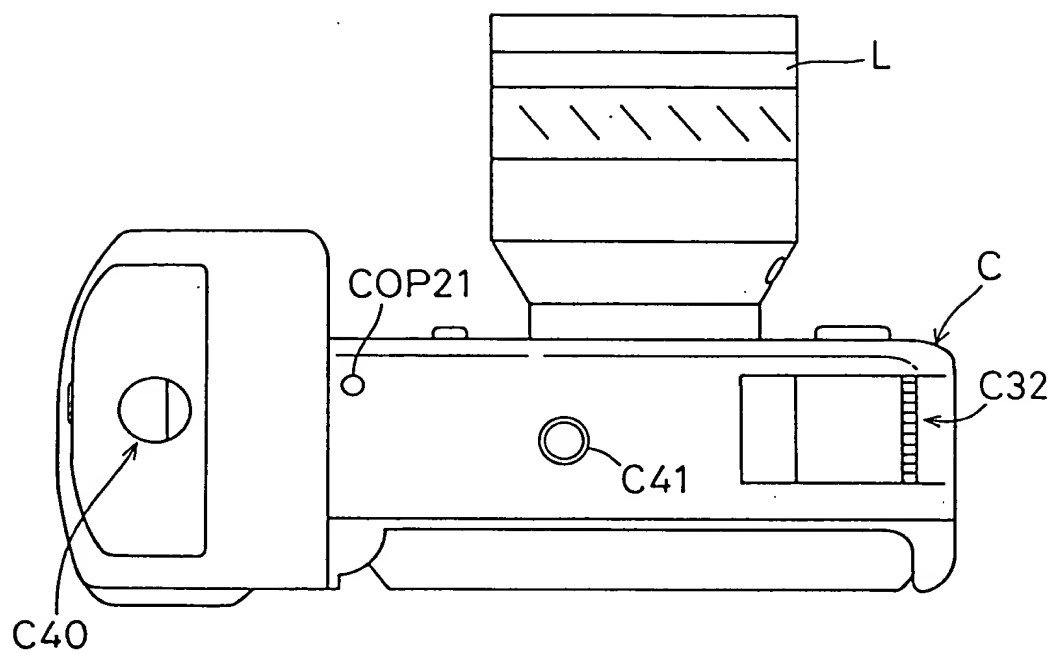
[Fig. 3]



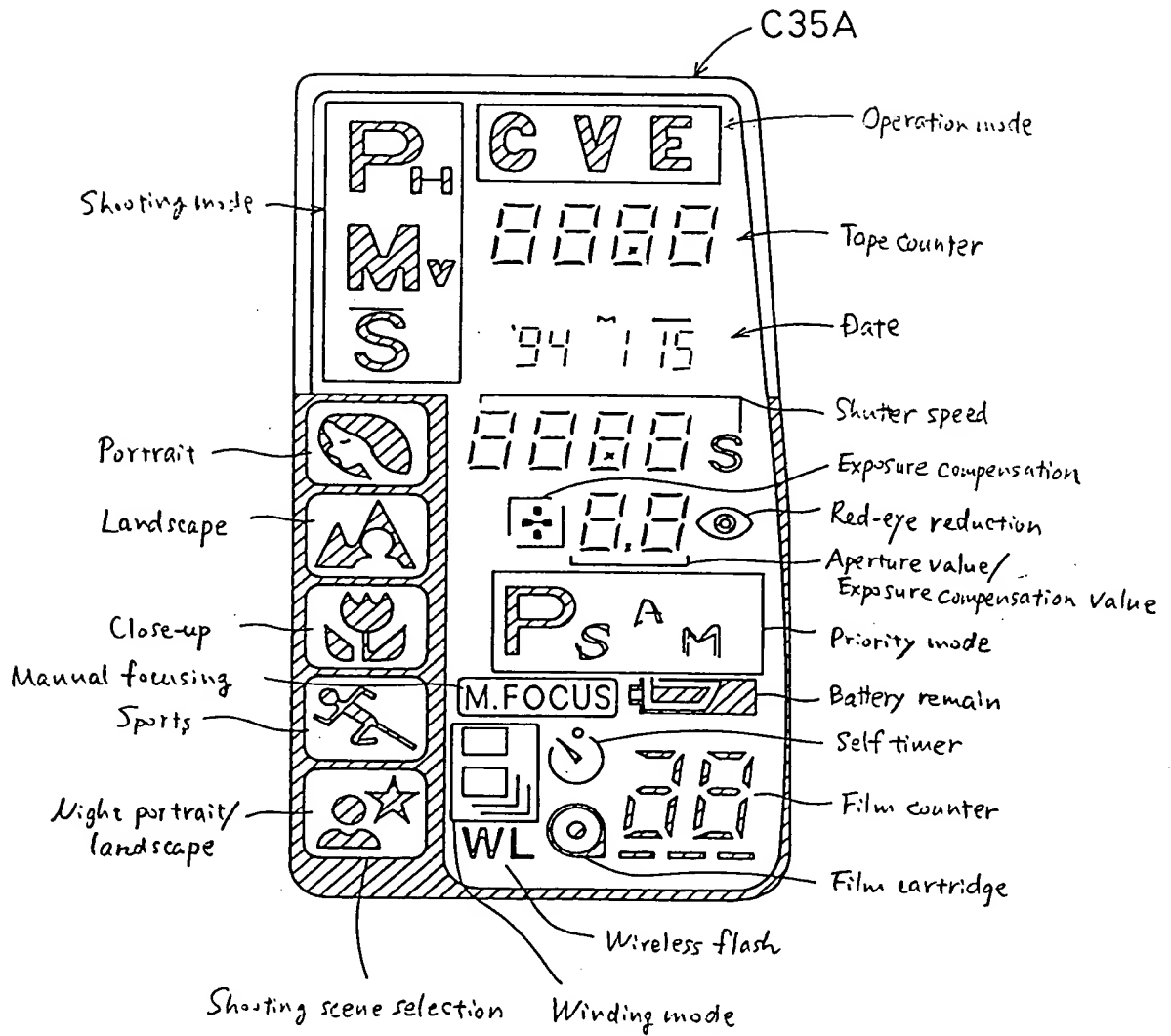
[Fig. 4]



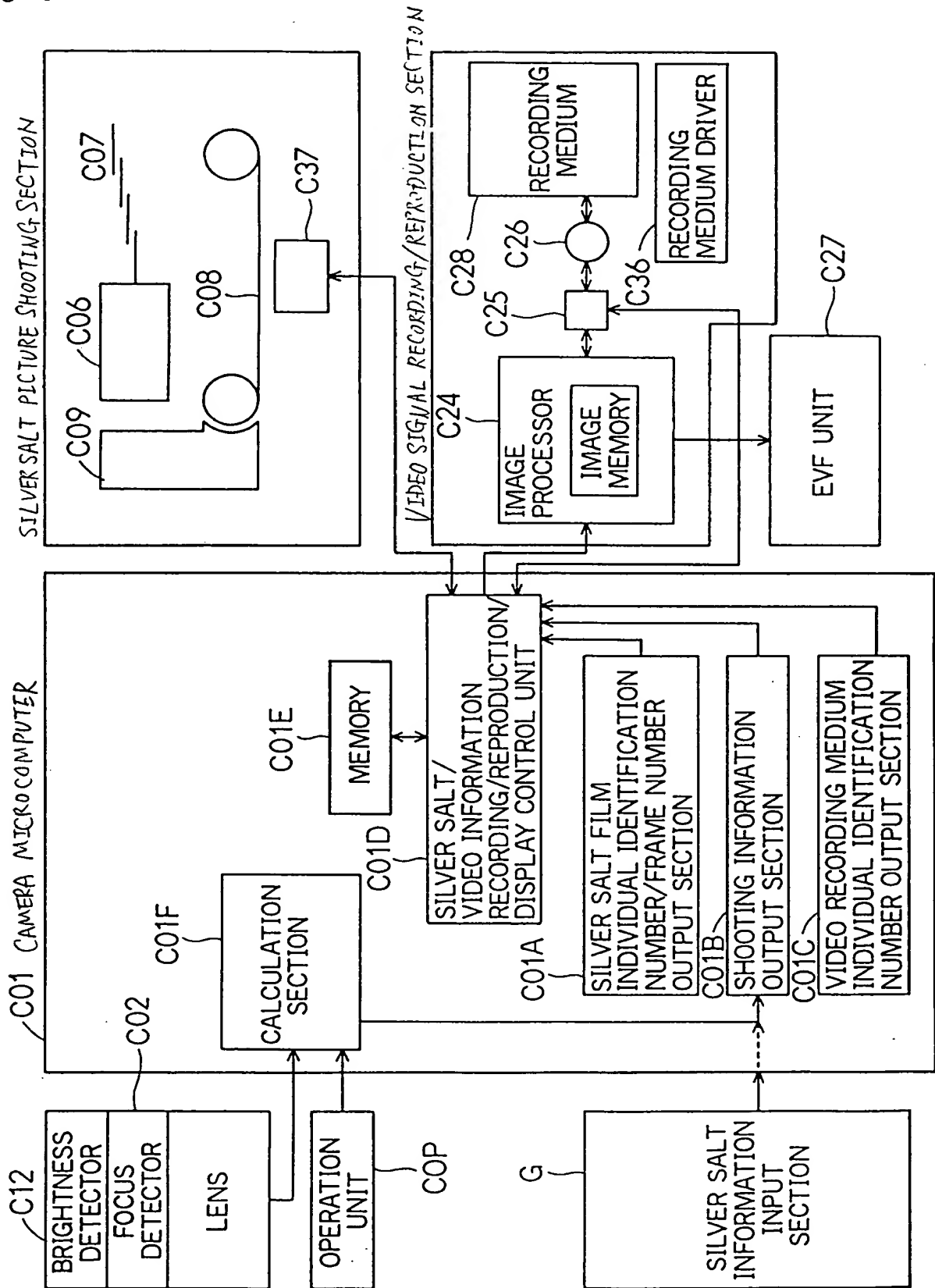
[Fig. 5]



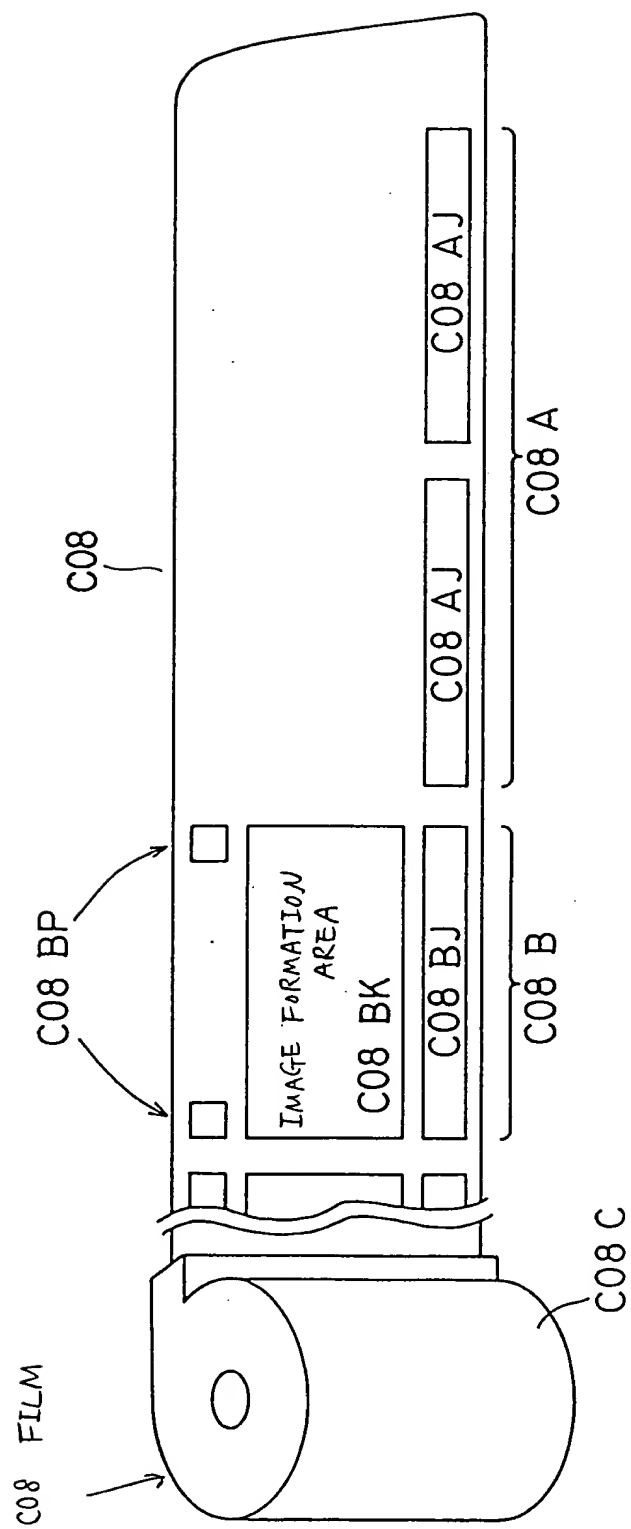
[Fig. 6]



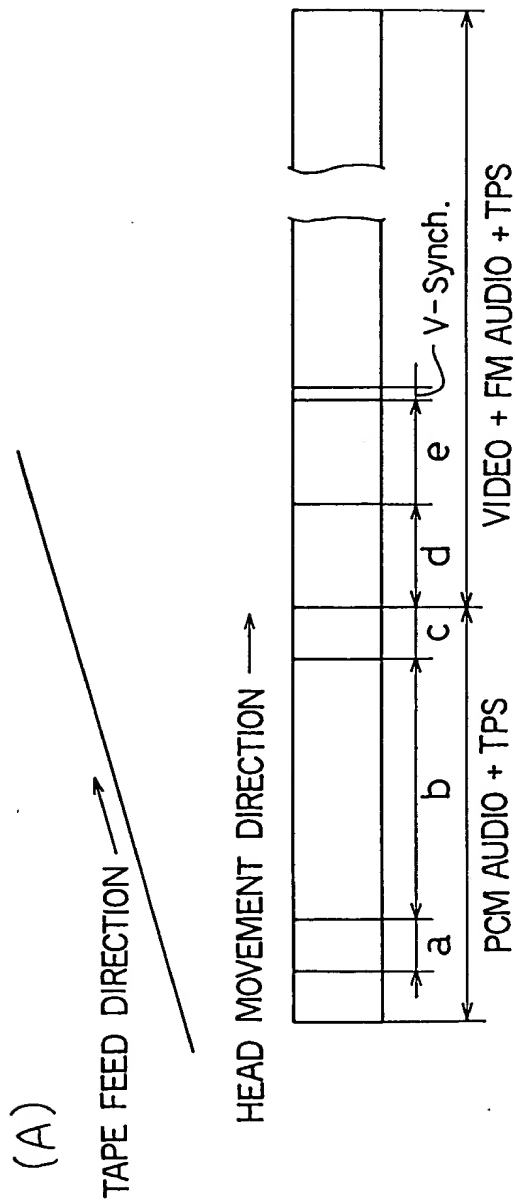
[Fig. 7]



[Fig. 8]



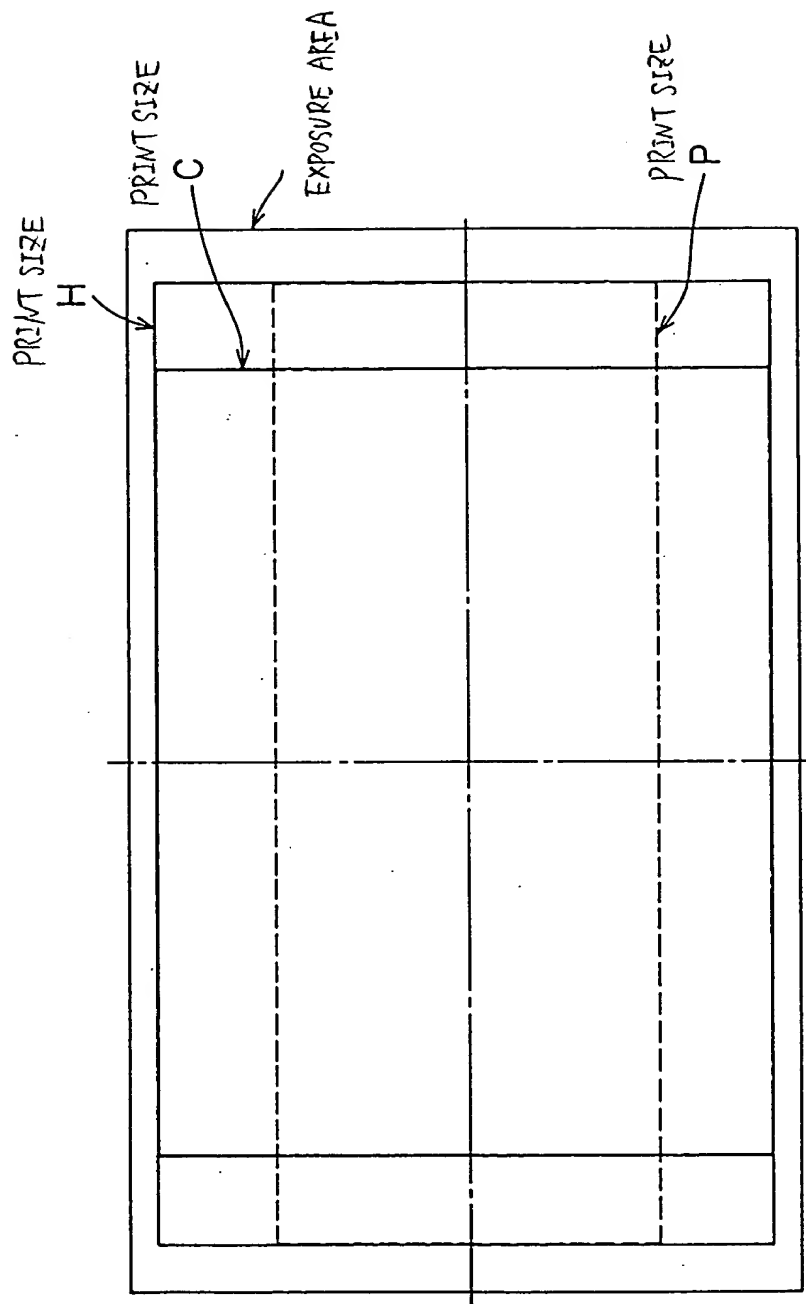
[Fig. 9]



(B)

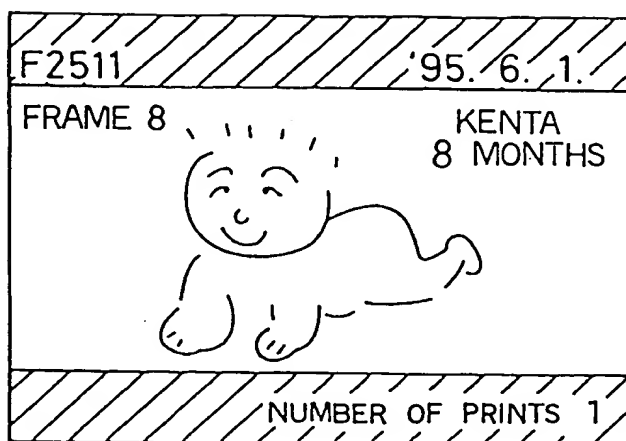
CONTENT	525-Line/60-Field System	625-Line/50-Field System
a Minimum Recording Time	2.06° (3.0H)	2.09° (3.6H)
b Data Area	26.32° (38.4H)	26.29° (45.6H)
c Blank After Recording	2.06° (3.0H)	2.09° (3.6H)
d Video Overlap	2.62° (3.8H)	2.62° (4.5H)
e V-Synch. 1	6H	7H

[Fig. 10]

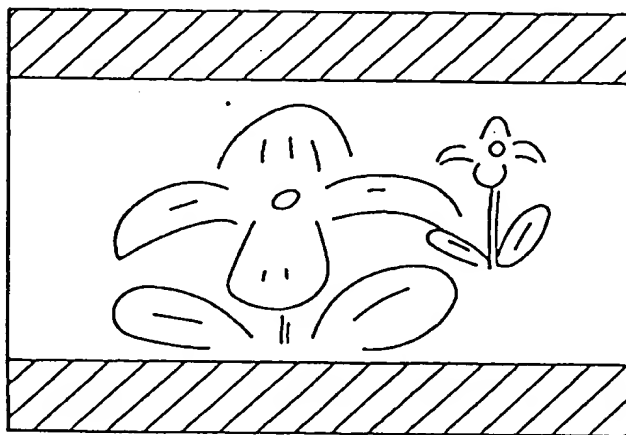


[Fig. 11]

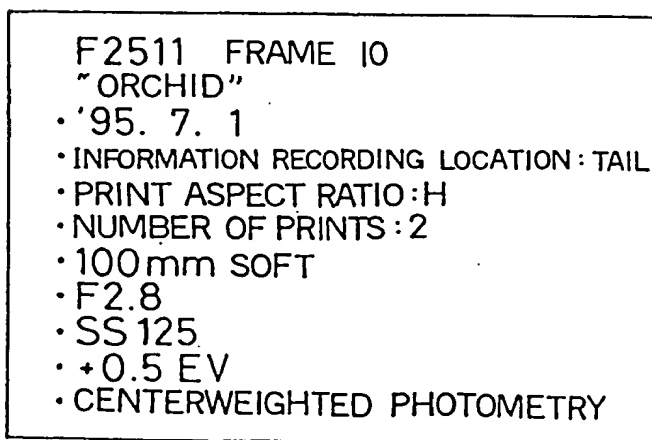
(A)



(B)



(C)



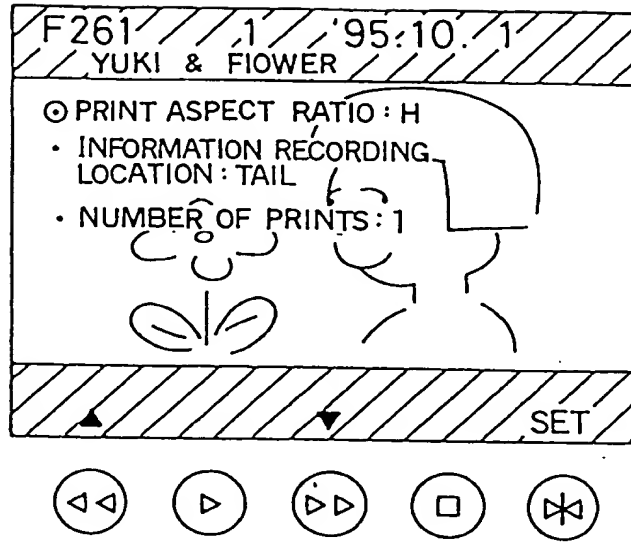
[Fig. 12]

F216		'95.8.29 ~ '95.10.1			
FRAME No.	DATE	PRINT SIZE		QTY	
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YUKI & FLOWER					
18	'95. 9.30.	17:20	H	1	
17	'95. 9.30.	6:00	P	1	
MT. FUJI					
16	'95. 9.16.	18:00	H	1	
15	'95. 9.16.	17:58	C	1	
GRANDPA					
▲ PLAYBACK ▼				SET	

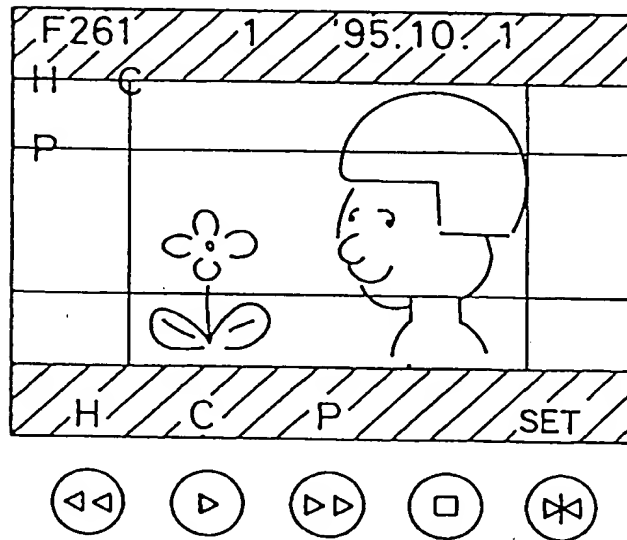


[Fig. 13]

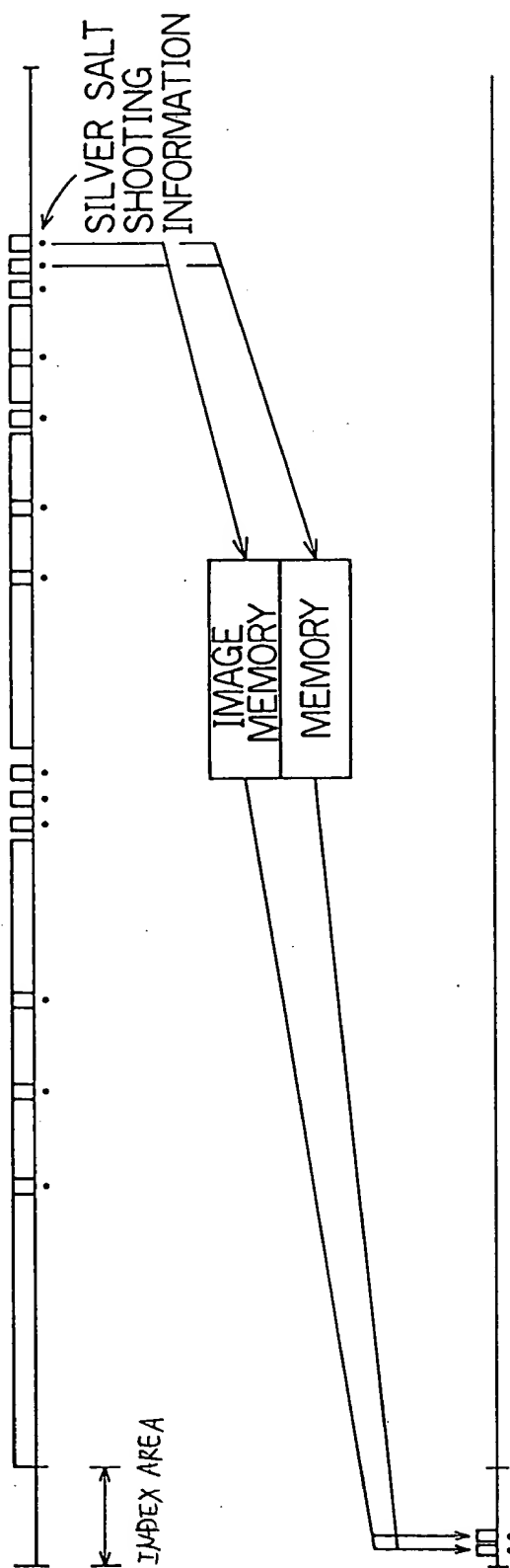
(A)



(B)



[Fig. 14]



[Title of the Document] Abstract

[Abstract]

[Object] To provide an image shooting apparatus in which shooting information obtained during silver salt shooting is stored in one place as index data.

5 [Features] An index recording area is provided in a top or other portion of a tape. In an edit mode, the tape is fed backward to reproduce the data recorded thereon, and meanwhile still-picture data is stored in an image memory. When the still-picture data stored in the image memory reaches a predetermined amount, the tape is fed up to the index area to record therein the still-picture data stored in
10 the image memory and the corresponding shooting data stored in a primary memory C01E. This is repeated until index data is created for the whole of the currently loaded film C08. When the edit mode is selected during shooting, the shooting information of the film C08, as stored in the primary memory C01E serving as an index data recording section, is read out and fed to an image
15 processor C24 so as to be displayed as index data in an EVF unit C27. Thus, reproduction of a data area is achieved.

[Selected Figure] Fig. 7

[Title of the Document] Ex-officio Correction Data

[Corrected Document] Petition

<Acknowledged and Additional Information>

[Applicant] Petitioner

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INFORMATION ON APPLICANT'S HISTORY

Identification Number [000006079]

1. Date of Correction July 20, 1994

[Grounds for Correction] Change in Corporation Name

Address: Osaka Kokusai Bldg., 3-13,
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Osaka-Shi, Osaka-Fu

Name: Minolta Co., Ltd.

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